

Ottawa National Wildlife Refuge

Water Levels

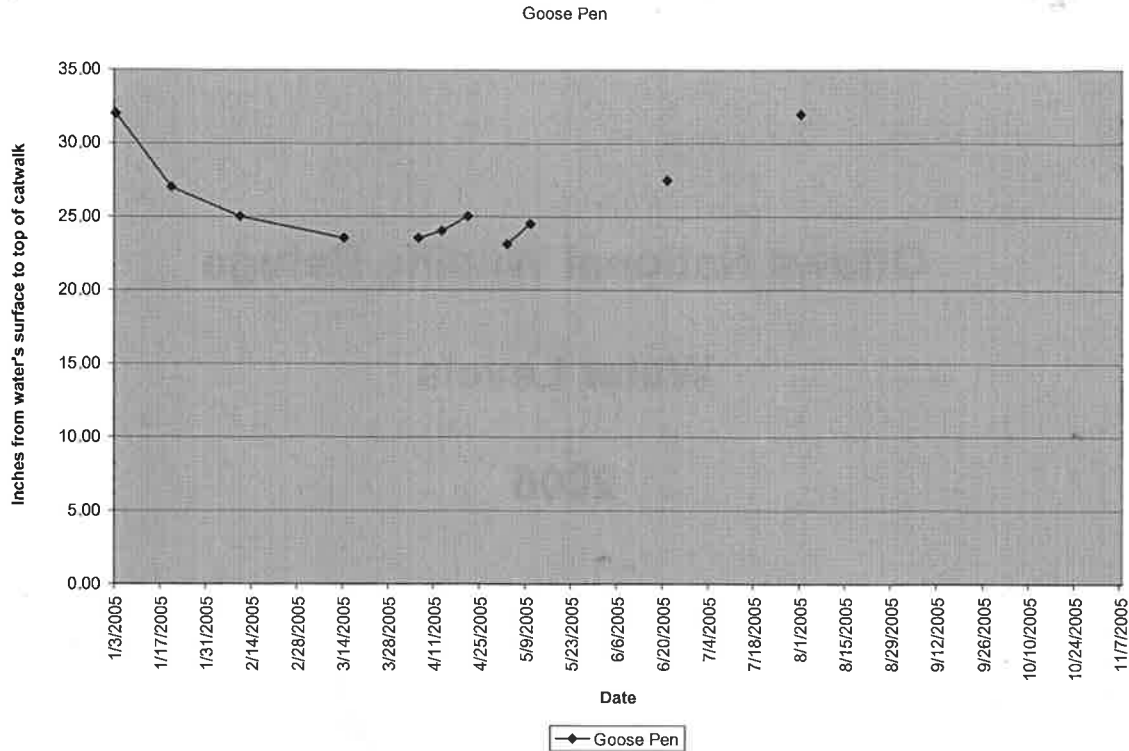
2006



Unit: Goose Pen

Acres: 57

2005 Activity: No water management activities were done.



2006 Unit Goal: Provide foraging and resting habitat for migratory birds.

Objectives: Control exotic flowering rush and purple loosestrife. Encourage more desirable vegetation.

Strategies: Begin draw down mid March for mudflats by 2nd week of April. Look at vegetation in early June, if 50% flowering rush, spray w/ habitat. Wait 2 weeks and then disk. Possibly plant millet and reflood if possible in September. May be able to coordinate reflooding with Woodies roost reflooding from construction.

Management Strategy Constraints: Lake levels may be low and reflooding needs to be coordinated with state.

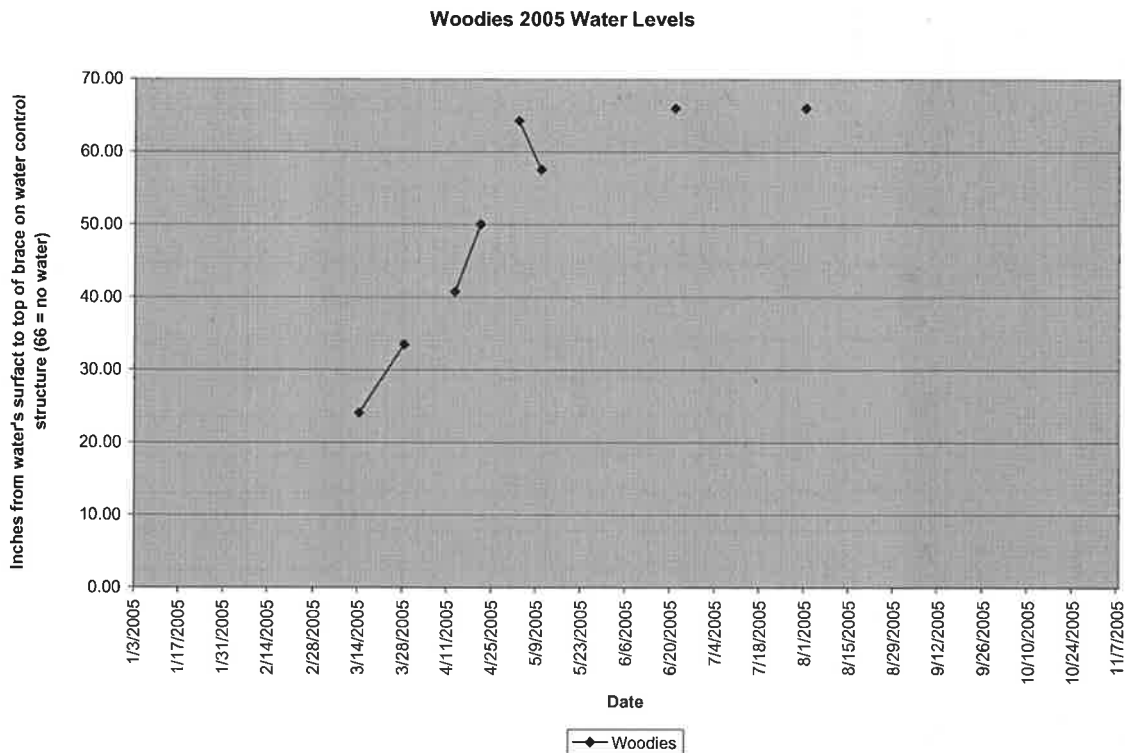
Unit: Goose Pen

Water level guide	2006 Date	Actual Water level	Notes
	Jan. 5	31"	
			New gauge installed
	Feb. 3	1.1 = 28"	
	3/20	1.22	Open for d.d. to ditch 1/2 way 21 st - 1.12 N winds
	Mar. 22	1.0	23 - 0.90 24 th closed - 0.80 27 th open (all the way) 0.76
	28	0.70	- equalized w/ ditch
d.d.			
	Apr. 10	0	3" below gauge - closed 50% mudflats + skilow 160 43"
0"-1/2"	25	0.2	
	May 5	0.10	
	22	0.30	Opened to ditch for d.d.
	23	0.30	25 th - 0.28 closed
Disk?	June 7	0.26	
	21	0.14	
	July		
	3	0.58	
	5	0.80	
	18	0.83	
	Aug.		
	1	0.85	
	16		Open to d.d. for shore birds closed in pm
	17		Open in am, closed pm.
Reflood	Sept. 19	0.60	Open to ditch
	21	0	Am - closed - water still in borrow areas
	Oct. 16	0.56	
	Nov. 14	0.83	
	Dec. 14	1.20	

Unit: Woodies Roost

Acres: 300

2005 Activity: This unit was drawn down beginning March 22 and completed by early May. The Magee Marsh staff was responsible for carrying out draw down. Walters millet, nutsedges, and other annuals responded well to the draw down. The unit was reflooded in early September for waterfowl.



Unit Goals: Provide foraging habitat and cover for wading birds and waterfowl.

Objectives: Manage for hemi marsh conditions

Strategies: Dike separating the east side of woodies from the west needs repair. Draw down in March to allow for construction, reflood ASAP when construction is complete. Reflooded spring water levels measurement around 45"-35" (2-3ft depth).

Potential Problems: Be conciseness of flooding potential to the Green Derby

Unit: **Woodies Roost**

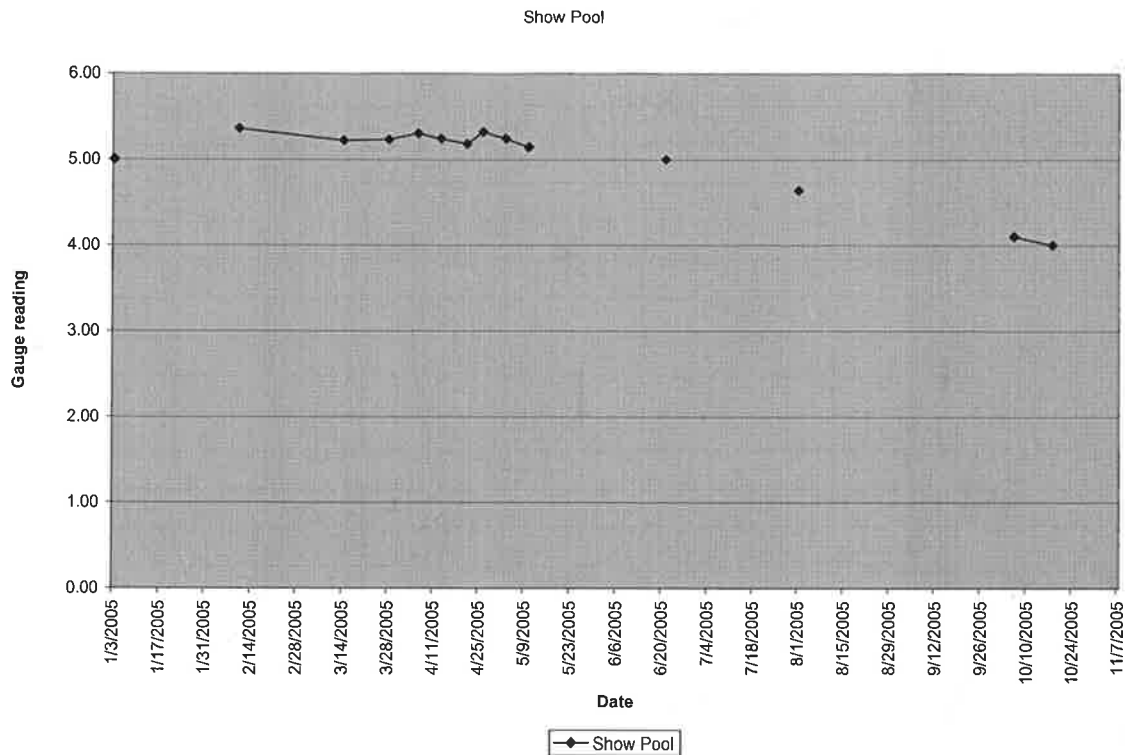
New gauge installed. Old readings taken with tape measure measuring from water surface to middle brace on gate.

Water level guide	2006 Date	Actual Water level	Notes
	Jan. 13	32"	
			New gauge
	Feb. 3/7	1.06 = 29"	West side: 1.14
	20	1.20	0.76 Open 45"
	Mar.		
	April 10	0	1' below gauge. East side Open. West side closed - 0.20
	Apr.		
	May 5	0	Construction complete, reflooding West & East sides
	25	0	.3 - bottom of unit. No water. West: 0 (.2 bottom of unit) closed
			↑ closed
	June 20	0 - dry	West: 0 dry
	27	0	
	July		
	3	0	dry 0 dry
	18		.76
	Aug.		
	1		1.54
	Sept.		
	19		Reflooding SR 2 hunt units
	Oct. 16	0.70	West 0.90
	Nov. 13		
	14	0.50	West 1.20
	Dec.		

Unit: Show Pool

Acres: 41

2005 Activity: Stoplogs were set to allow passive water level management in the unit. Levels were managed less than full pool to allow any purple loosestrife larvae and beetles to emerge from higher ground.



Unit Goal: Because of the location of this pool to the office, it has been designated as a “show” pool with the intent that it can provide viewing of waterfowl including other wildlife and be a model wetland. This unit will be managed as a permanent wetland with deeper water to over winter fish and provide public catch and release fishing opportunities.

Objectives: Increase diversity of emergent marsh vegetation and provide deep water for fish habitat.

Strategies: Add boards to agridrain structure to allow increased water levels. Optimum levels will provide 1’ of water on high ground (approximately 6.00 on gauge in May). Evapotranspiration will decrease water levels approximately 10 inches by fall. Treat island invasives.

Management Strategy Constraints:

Unit: Show Pool

Water level guide	2006 Date	Actual Water level	Notes
	Jan. 13	4.62	Water 1 board low in structure
	19		Add 8" board
	Feb. 3/7	4.96	
	14	5.10	
	Mar. 27	5.08	
	Apr.		
≈ 6.0?	May		
	25	5.06	
	June		
	7		
	21	4.90	
	July		
	3	5.20	
	5	5.40	
	18	5.40	
	Aug. 1	5.49	
	Sept. 19	5.28	
	Oct.		
	Nov. 14	5.60	3-4" from top of board
	Dec. 14	5.88	Over boards ≈ 1" Highest level possible - Maxed out on dike behind
	1/3	5.82	Changed board from 7" to 5" from crop + East dike. Winter
			5.5 max. in woods E of shop.

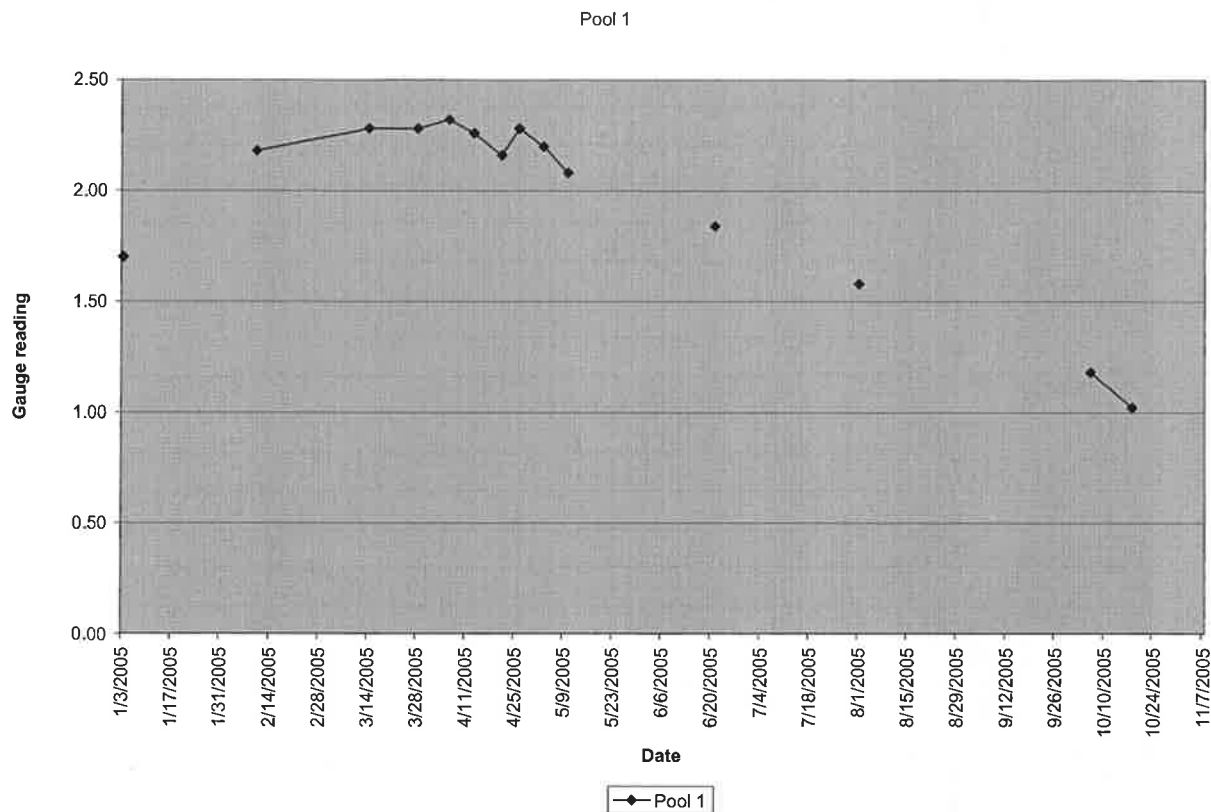
1/3/02 East dike + south dike weakest/lowest. Max H₂O 5.80'

-structure width - 15 3/4"

Unit: Pool 1

Acres: 343

2005 Activity: The water levels were high in the spring so gates were opened briefly to let excess water out. Water remained at full pool (2.0) in the spring and slowly dropped 1' by evaporation and evapotranspiration throughout the summer and fall.



Unit Goal: Provide habitat for nesting common terns, foraging herons, mussel beds, rails, and fish. As well as provide a rest area for waterfowl.

Objectives: The topography of this unit allows for a variety of water level depths. To provide habitat for nesting common terns, fish and mussels, maintain deep (3-4ft) open water areas. Provide emergent and submergent wetlands for wading birds, waterfowl and invertebrates. The higher elevation areas along the south and north parts of the unit will provide flooded grass and sedge areas for rails.

Strategies: Ensure unit is at optimum pool in the spring and allow evapotranspiration to decrease water levels no lower than 0.90 by September.

Management Strategy Constraints:

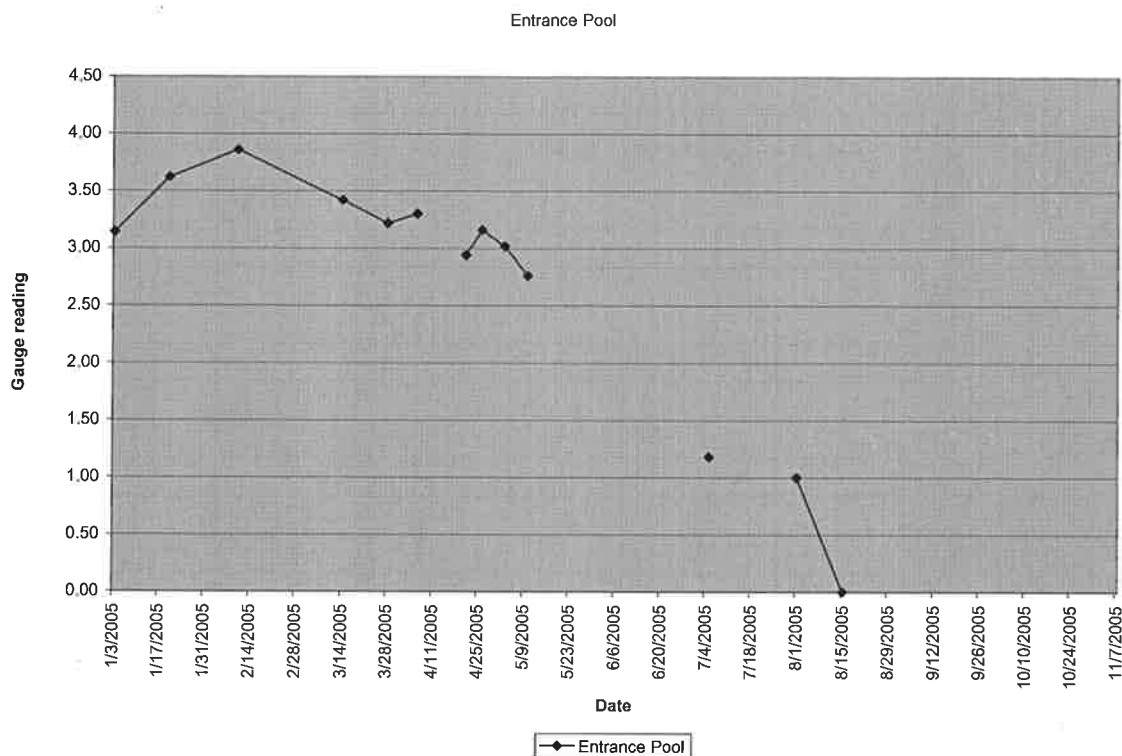
Unit: Pool 1

Water level guide	2006 Date	Actual Water level	Notes
	Jan. 13	1.54	
	Feb. 3/7	1.80	
	14	1.89	
	Mar.		
2.0-1.8			
	Apr.		
	May		
	25	1.80	
	June		
	21	1.68	
	July		
	3	1.86	
	18	2.02	
	Aug. 1	2.08	
	Sept. 19	1.84	
1.0	Oct.		
	Nov. 14	2.08	
	Dec.		
	1/3	2.50	Common like lowest dike - watch high water. Stack side has bad erosion/muskrat damage

Unit: Entrance Pool

Acres: 150

2005 Activity: This unit was scheduled for construction this season. Water was let out to decrease levels, and with evapotranspiration this unit slowly drewdown and was completely dry by August. A new stoplog water control structure was installed in October to allow for better management. The old gauge was removed.



Unit Goal: Provide a diversity of marsh type habitats, ranging from cattail stands to open water. Attract a variety of waterfowl, shorebirds, water birds, and wetland animals to provide opportunities for wildlife viewing. Control exotic invasive species.

Objectives: Provide mudflats in transitional areas for early spring shorebirds. Reflood to combat purple loosestrife. Provide shallow to deep emergent marsh.

Strategies: Install new water gauge. Use the Marsh master to disturb soil and provide mudflats in early May. Continue to allow unit to collect water. May need to add water by May to discourage and stress purple loosestrife.

Management Strategy Constraints:

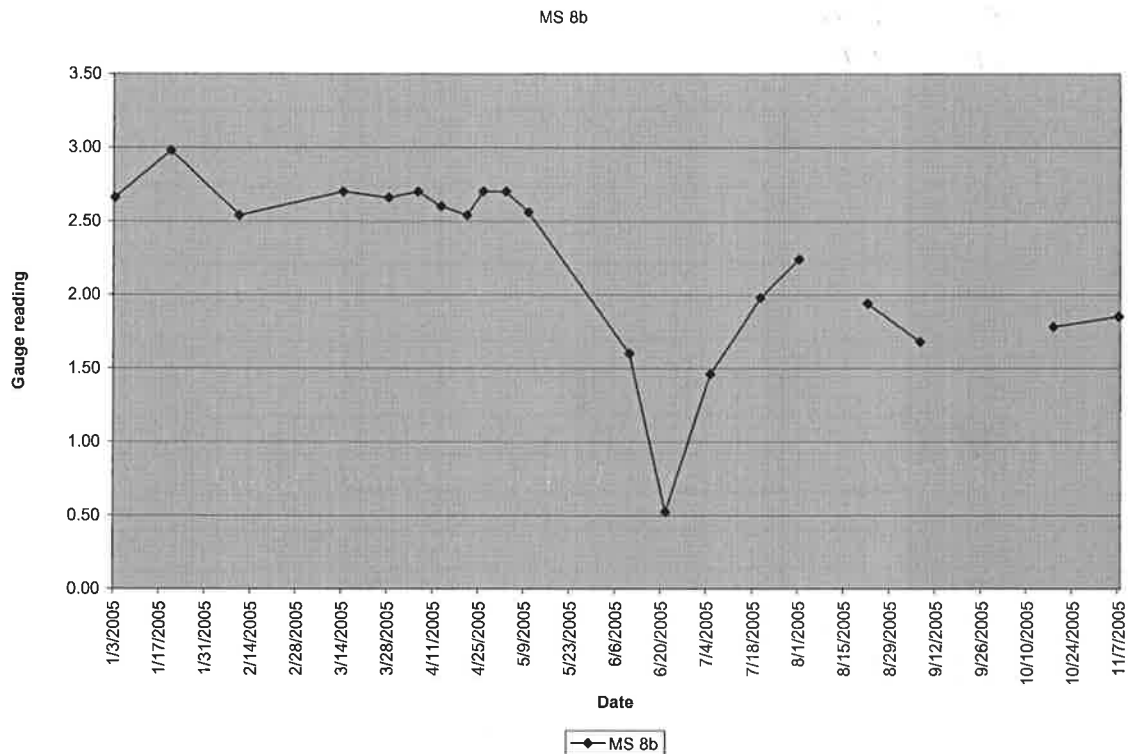
Unit: Entrance Pool

Water level guide	2006 Date	Actual Water level	Notes
			New gauge
	3/7	1.20	
	20	1.40	Structure leaking btwn boards.
	Mar.		
	Apr.		
	May		
	25	1.40	structure leaking btwn boards
	June		
	7	1.37	
	21	1.25	
	July		
	3	1.72	
	18	1.92	
	Aug. 1	1.86	
	Sept. 19	1.48	
	Nov 14	1.80	overboards - other boards
	Dec		
	Oct. 4	2.10	top of board - leaking bed

Unit: MSU 8B

Acres: 100

2005 Activity: To complete the final construction step, the unit was drawn down in May. Construction was finished and the unit was reflooded in July. Low lake levels and the insufficient pump were unable to increase water levels significantly due to evapotranspiration.



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Manage against invasives and allow for more open areas in the marsh.

Strategies: Increase water levels to create openings in the marsh and combat purple loosestrife. Estimated gauge readings should be around 3.6 to put approximately 18" on unit in the spring. Levels may need to be higher.

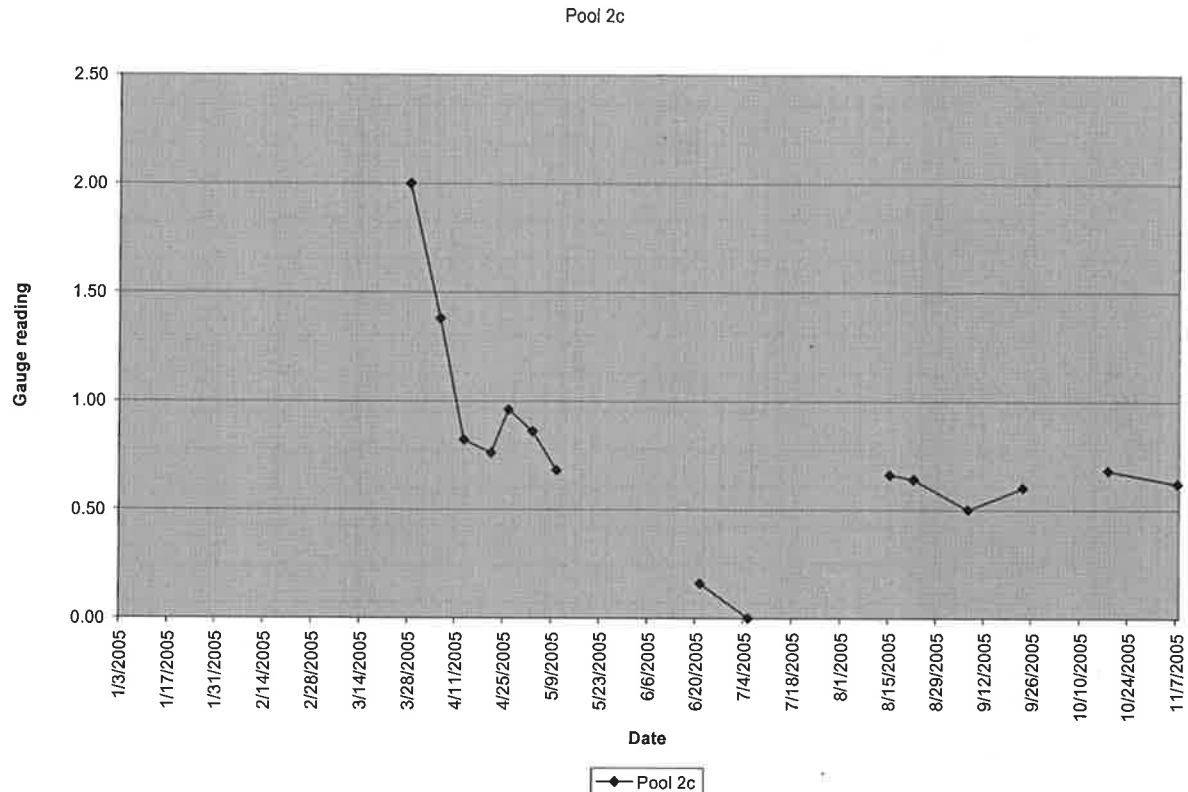
Management Strategy Constraints:

Unit: MS 8b

Water level guide	2006 Date	Actual Water level	Notes
	1/5	2.56	
	1/23	2.70	
	Mar.		
	Apr.		
	May		
	25	2.74	
	June		
	7	2.68	
	14	2.58	
	21	2.54	
	July		
	3	2.82	
	5	3.00	10 th 2.90 17- 3.00
	18	2.76	
	Aug. 11	2.76	
	31	2.94	Pumping up to Refbed V.C wetland. s pump OFF
		2.94	
	Sept. 19	2.90	
	Oct. 16	2.86	
	Nov 14	3.08	2-3" from top of board
	19	3.2	Pumping into unit from Krause rd ditch
	Dec 4	3.40	No pumping
	15 4	3.38	Over boards 1"

Unit: Pool 2C**Acres: 82**

2005 Activity: This unit was drawn down in late March with a portable pump. By the end of May, 60% of the unit was drawn down and pumping was no longer feasible. The water levels continued to drop through June and July until approximately 90% of the bottom was exposed. The beginning of September the unit was reflooded, but low lake levels were a limiting factor.



Unit Goals: Attract a variety of waterfowl, shorebirds, water birds, and wetland animals to provide opportunities for wildlife viewing. To enhance water level management capabilities, a project to ditch MS 8A and install individual stop log structures to Pool 2A, 2B, and 2C is proposed.

Objectives: Manage for hemimarsch conditions.

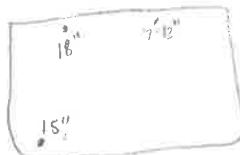
Strategies: Water levels may still be low from the 2005 drawdown. To increase water levels a portable pump will need to be set up in the spring (March-May). If depths are approximately 2-2 ½ feet in the spring (approximately 2.5 on gauge) evapotranspiration should decrease levels to 1-1 ½ feet in the fall.

Management Strategy Constraints: Currently there is no independent water control for this unit, unless a portable pump is used. This can be costly and needs frequent monitoring/maintenance. Refuge budget and project priority will determine water management activities.

Unit: Pool 2c

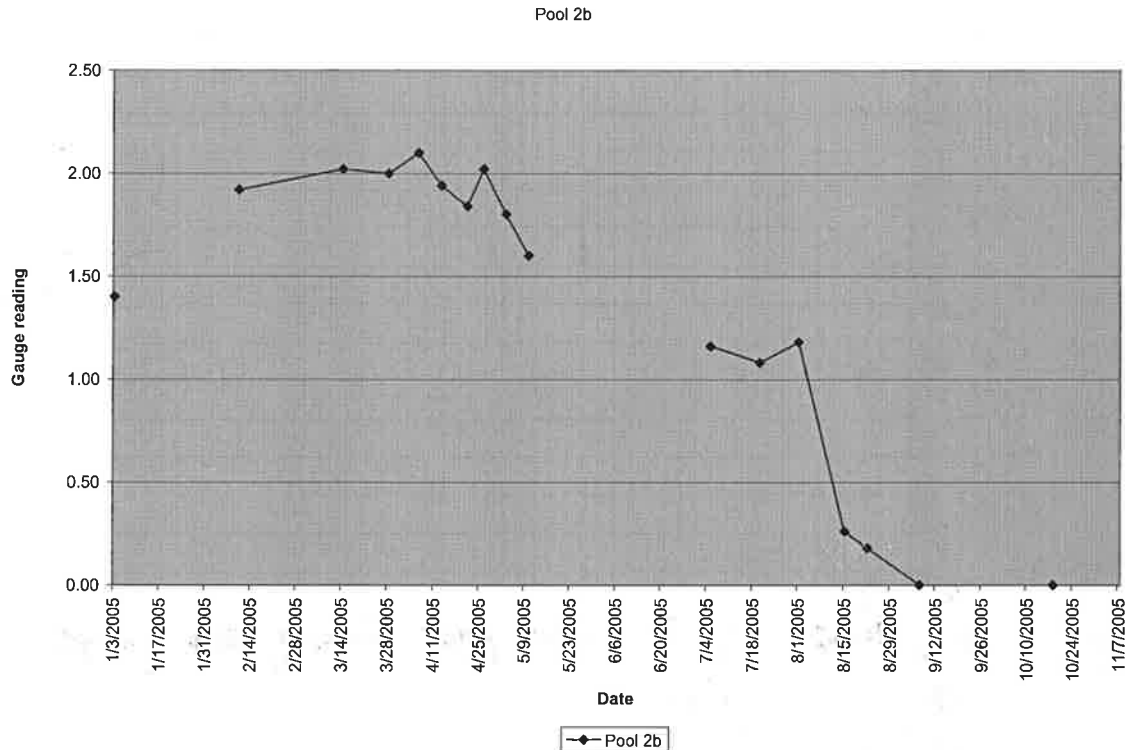
Water level guide	2006 Date	Actual Water level	Notes
	1/5	1.16	
	1/23	1.24	
	Mar. 7	1.38	
	20	1.46	
	27	1.44	
	Apr. 10	1.46	
	May		
	25	1.36	
		1.	
	June 21	1.26	
	July		
	3	1.47	
	5	1.60	
	18	2.96	1.6? Lotus plant blocking gauge
	Aug. 1		1.7
	11		1.5
	31	1.50	
	Sept. 19	1.46	
1.5	Oct. 16	1.46	
1'-1 1/2" deep	Nov 14	1.70	
	Dec 4	2.00	
	15	2.00	

4/12/06



Unit: Pool 2B**Acres: 95**

2005 Activity: A new gauge was installed. The gate to Pool 2A was opened to allow water out of 2B. The unit slowly continued to draw down through evapotranspiration. In August a portable pump was set up to complete a late summer drawdown for shorebirds. The majority (85-90%) of the bottom was exposed by the first week of September. Only 18% of the unit was available mudflats for shorebirds. The unit received good use from shorebirds and wading birds, especially snowy egrets. The unit was attempted to be reflooded in early November, but low lake levels limited available water.



Unit Goals: Attract a variety of waterfowl, shorebirds, water birds, and wetland animals to provide opportunities for wildlife viewing.

Objectives: Perennial smartweed is the dominant emergent vegetation in the unit, try to encourage some annual vegetation. Provide some mudflats and shallow water for spring shorebirds and dabbling ducks. Provide deep submergent wetlands for fish and invertebrates, as well as shallow emergent wetlands for wading birds

Strategies: Begin draw down last week in March for spring shorebirds and to allow for any annuals to possibly germinate. Reflood June 1st to obtain an average depth of 12-14 inches (guage reading of 1.0-1.3). This will provide wading birds foraging habitat. Evapotranspiration through July and August will decrease levels 6-8 inches providing shallow wetlands for fall dabbling ducks and some shorebirds.

Management Strategy Constraints: Currently there is no independent water control for this unit, unless a portable pump is used. This can be costly and needs frequent monitoring/maintenance. Refuge budget and project priority will determine water management activities. In addition, the August draw down in 2005 could have allowed for purple loosestrife seeds to come into contact with the exposed mudflats. Purple loosestrife germinates in Late May-June. The unit will need to be monitored for exotics.

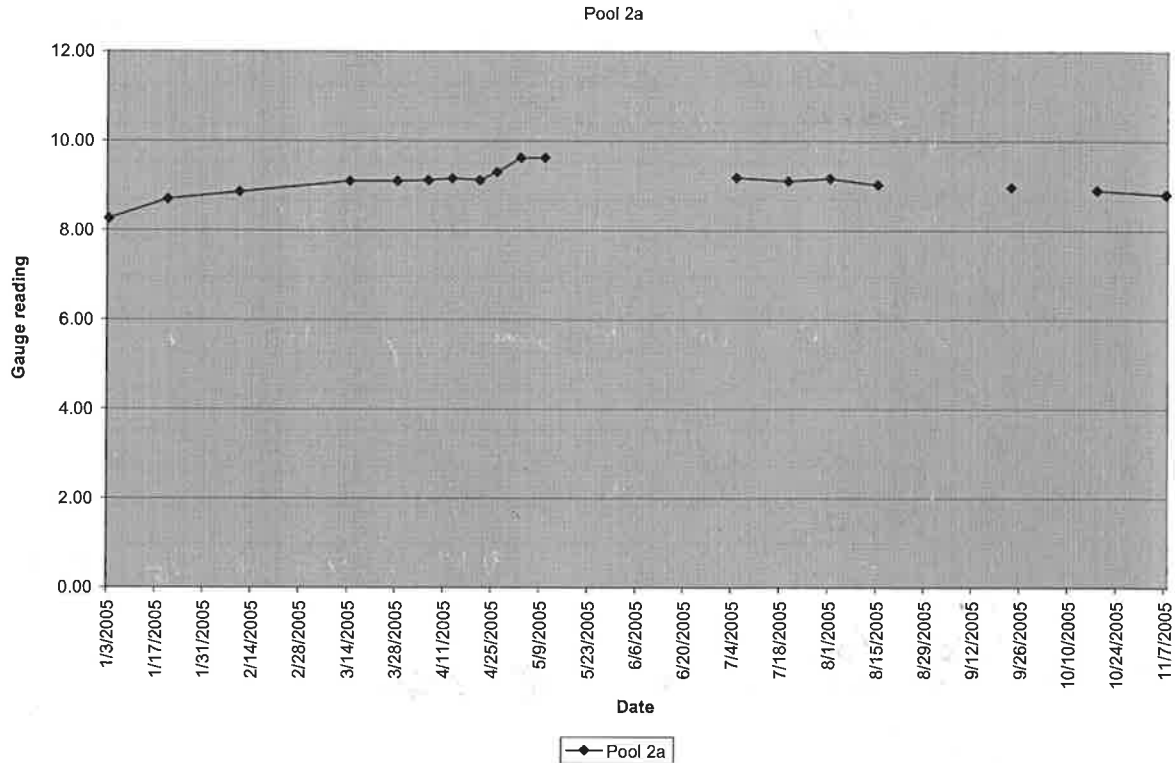
Unit: Pool 2b

Water level guide	2006 Date	Actual Water level	Notes
	1/5	0.42	
	Mar. 7	0.76	
	20	0.84	Set pump up & start d.d. on the 23 rd . Pump ⓐ clock.
	24	0.76	shot off @ 3pm. 27 th pumps on
	30	0.60	
	Apr. 10	0.34	
	13	0.12	
	17	0	still needs some H ₂ O off 19 th -21 st pumping. gauge reset to 0.80=0
	25	0.70	
	May 25	0.70	west side small sedges 1 inch above
1-1.3	June 5	0.70	avoid germination of P.L. - opened to 2A
12"-14" deep	6	0.70	lots of Ducks
	7	0.69	
	14	0.60	15 0.60 21 st .74 22. 1.16
	July 3	1.26	
	5	1.40	10 th -13 th 18 1.42
	Aug. 1	1.47	
	11	1.26	592-486 ducks
	31	1.28	Windy
	Sept. 19	1.2	
≥ 0.3			
	Oct. 14	1.20	
	Nov 14	1.40	
	Dec 4	1.74	
	15	1.80	300 Swans - 900 in C.C.

Unit: Pool 2A

Acres: 65

2005 Activity: Water levels remained slightly low in the spring from 2004's draw down. Some water was added from unit 2B in the spring as the result of opening the gate between the units. The calculated average depth of 45% of the unit was 1 ½ to 2ft in May. Twenty-five percent was 10" or less, and the remaining 30% was saturated to dry. The unit decreased approximately 6 inches by October through evapotranspiration.



Unit Goals: Control exotic invasive plants (Eurasian watermilfoil) and willows encroaching on high ground. Attract a variety of waterfowl, water birds, wetland animals and invertebrates to provide opportunities for wildlife viewing. To enhance water level management capabilities, a project to ditch MS 8A and install individual stop log structures to Pool 2A, 2B, and 2C is proposed.

Objectives: Manage this unit with deeper water areas (3ft) along the north edge in spring (May) and a gradient down to 12 inches on the willow island. The deeper water will provide submergent marsh to benefit invertebrates, fish, wading birds, and waterfowl. The gradient areas will provide emergent wetland for foraging and cover for these birds as well. Flooded willows will provide roosting/nesting habitat for wood ducks. Gradient areas may provide some fall shorebird habitat.

Strategies: To obtain optimum water levels, water may need to be added in April/May via the electric pump on MS 8A. Estimated optimum level will read 0.50 on the gauge in May. Evapotranspiration will decrease water levels an estimated 6-10" by September.

Management Strategy Constraints: Adding water may not be possible until VC pond is full. Water levels may also need to be held higher if adding water to Pool 2B via 2A.

Unit: **Pool 2a**

Majority of mudflats exposed at 7.52

Water level guide	2006 Date	Actual Water level	Notes
	1/5	9.36	
	1/25	9.48	let water in from 8A 1/27 closed.
	Mar. 7	9.94	
	20	0.02	
	4/10	0.02	
	4/13	0.02	opened to 8a - adding H ₂ O to 2a
	Apr.		
	May		
	25	.08	
0.52			
	June 5	0 -	between top & bottom gauge (think of "0" as "10")
	6	0.07	opened to 2B & 8A
	7	0.10	
		0.24	15 - 0.30 21 .70 22 .79
	July		
	3	.46	
	5	0.60	40 th 4/3 10 th 0.50
	18	.58	
	Aug.		
	1	.58	
	31	0.40	
	Sept.		
	19	0.30	
	Oct. 16	0.30	
	Nov 14	0.54	
	Dec 4	0.30	
9.52	15	0.84	200-300 Canada G.

Unit: MSU 8A

Acres: 56

2005 Activity: Water levels were managed to encourage perennial emergent marsh vegetation. The unit was at full pool in the spring and slowly lowered throughout the season.

Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Encourage marsh vegetation and invertebrates

Strategies: Manage water levels for full pool in the spring, with a gradual decrease by fall, no lower than 24" from water's surface to top of brace.

Plan for ditching project in 2007. Get Corp permit process going.

Management Strategy Constraints:

Unit: MS 8a

Water level guide	2006 Date	Actual Water level	Notes
	1/5	10"	over catwalk
	1/25	11"	Letting water out into 2A
	Mar. 7	1.16 = 6"	1/27 closed - 7"
	20	1.22	
	27	1.18	
	Apr. 10	1.12	
	4/13	1.12	- Opened to let H ₂ O out into 2A - closed 1a pm
	4/17	1.0	- windy (HE)
5 1/2" over catwalk	May 25	0.94	
	June 5	0.90	Opened to 2A
	6	0.87	Closed to 2A
	6/7	0.68	Open to 2A
	7	0.62	14 - 0.16 Pump On 15 - 0.14 Pump off
	July 3	0.17	2/20. 14
	5	0.60	7/10 - .5 11 - .5 13 - .6
	17	0.66	18. 0.64 24 - 0.54
	Aug. 1	0.64	6/21. 14
	31	0.44	22 pump off
	Sept. 19	0.36	
	Oct. 11	0.36	
	Nov 14	0.60	
	Dec 4	0.90	
	15	0.94	

Unit: MSU LL

Acres: 27

2005 Activity: The unit is reflooded in the fall to optimize waterfowl habitat.

No place to measure water levels in 2005.

Unit Goal:

Objectives:

Strategies: Install water level gauge. Treat phragmites invasions and continue monitoring.

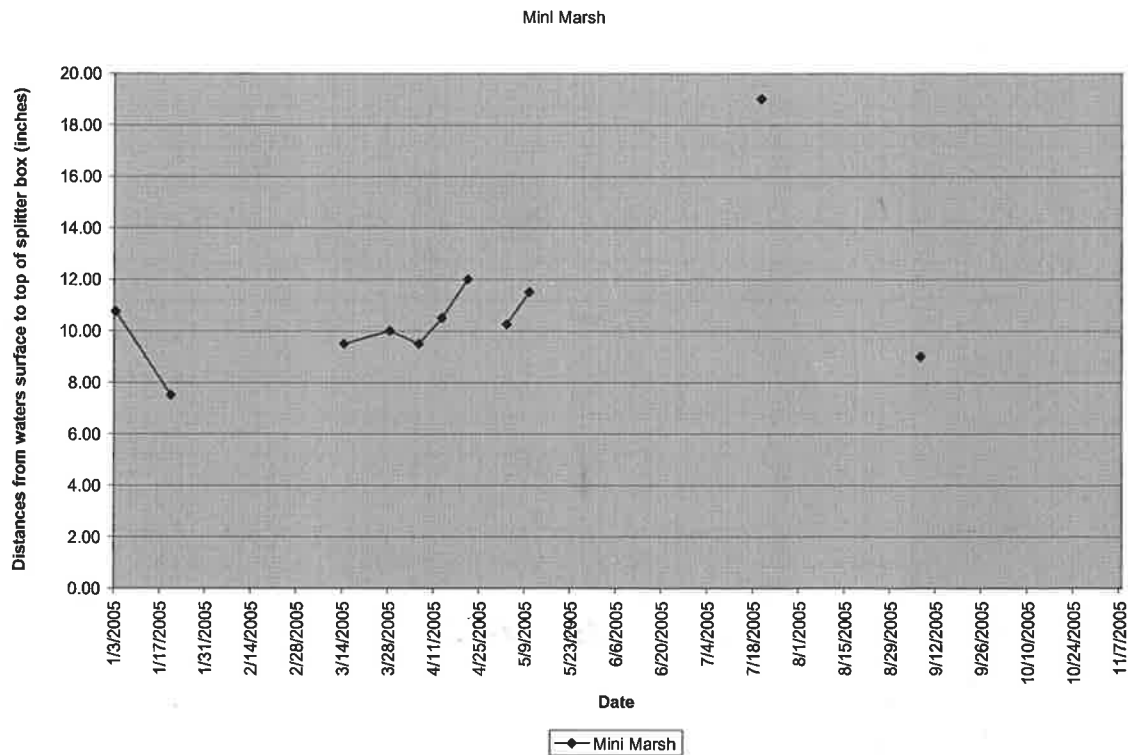
Management Strategy Constraints:

Water level guide	2006 Date	Actual Water level	Notes
	1/5	high	
	3/7	1.1	new gauge
	3/20	1.2	
	3/27	1.2	
	4/10	1.36	
	5/25	1.46	5/26 - 1.54 ^{Dam} - opened 5" to ditch. Water over road in woods closed 1pm → 1.48.
	5/30		opened 1.38 - closed
	5/31		opened 1.35 - closed 1.16
	6/1	1.22	
	6/7	1.18	
		1.20	
	6/21	0.96	
	7/3	1.24	
	7/5	1.40	10 th - 1.30 opened for d.d. 11 th - closed 1.16
	7/17	1.30	13 - 1.24 (rain) opened open 18 1.16 20 - 1.02 closed
	7/24	0.90	
	8/1	1.02	
	8/31	0.60	
	9/19	0.40	
	10/16	0.44	
	11/4	0.90	
	12/4	1.30	
	12/15	1.30	

Unit: Mini Marsh

Acres: 30

2005 Activity: Minimarsh is used as a holding tank to pump up blind 93 in the fall. During this time water levels fluctuate highly until pumping is finished.



Unit Goal: Maintain as hemi marsh

Objectives: Manage water levels to achieve 15 acres of deep submergent wetland as well as 15 acres of shallow to mid-depth emergent wetland habitat.

Strategies: Maintain flooded optimum pool, with maximum water levels at 10" and minimum at 8"

Management Strategy Constraints:

Unit: **Mini Marsh**

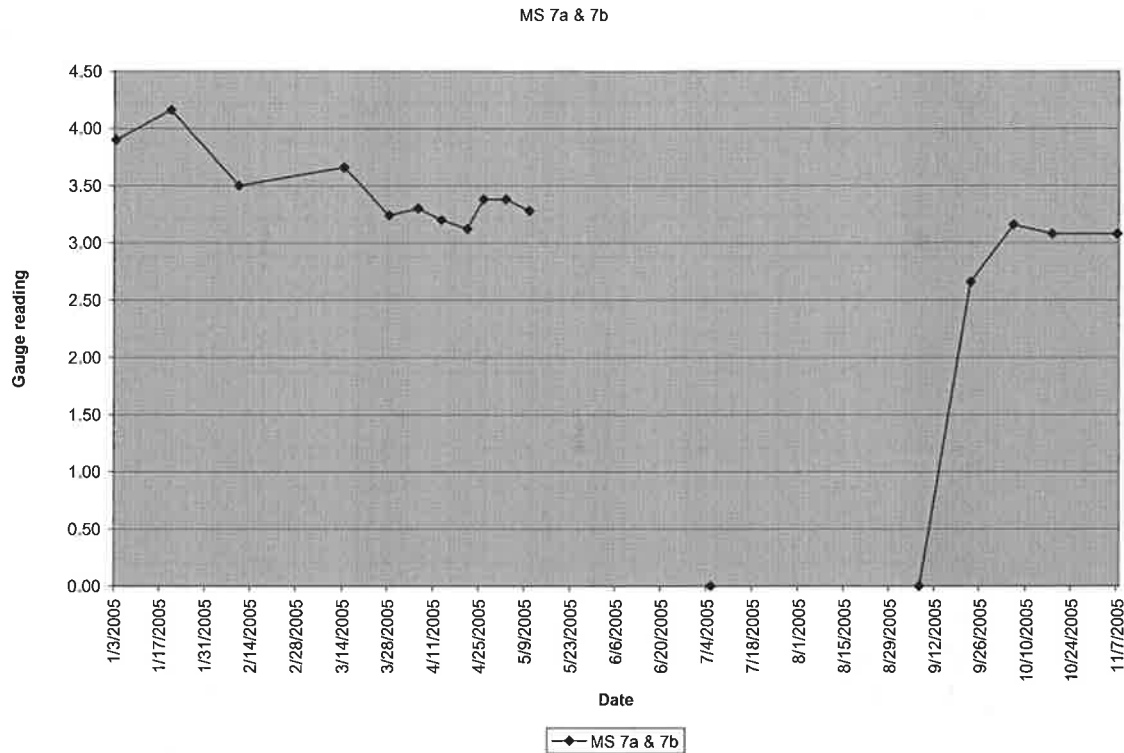
Measure from waters surface to top of splitter box. If water in unit gets much higher than half way up the side of the discharge pipe, water leaks through splitter box to Crane Creek. Needs new flap gate.

Water level guide	2006 Date	Actual Water level	Notes
	1/5	10"	
	Mar. 7	9"	
10"			
	Apr.		
	May		
	30	16"	
	June		
	7	11"	
	21	13.5"	
	July		
	3	10.4	
	18	9.5	
	Aug. 1	9.25	
	Sept. 19	11 1/2"	
	Oct. 14	15 1/2"	
	Dec 15	7 1/2"	

Unit: MSU 7A & 7B

Acres: 94

2005 Activity: This unit was drawdown in June for construction. The dike along the West side of butternut woods was realigned and rebuilt so that water levels could be managed in the units, without flooding the butternut woods. The project was completed and reflooded in September in time for fall migration.



Unit Goal: Provide migratory bird foraging and resting habitat. In addition the transitional areas on 7B will allow for easily accessible upland habitat for nesting as well as provide a gradient of water levels.

Objectives: This unit is shallow and can provide good annual plant production and emergent wetland habitat. Manage water levels against invasives.

Strategies: Partially draw down in Mid-March (to 2.5 on gauge?) to allow high reed canary grass areas to dry. Disk and plant to millet. Reflood when millet allows

Management Strategy Constraints:

Unit: MS 7a & 7b

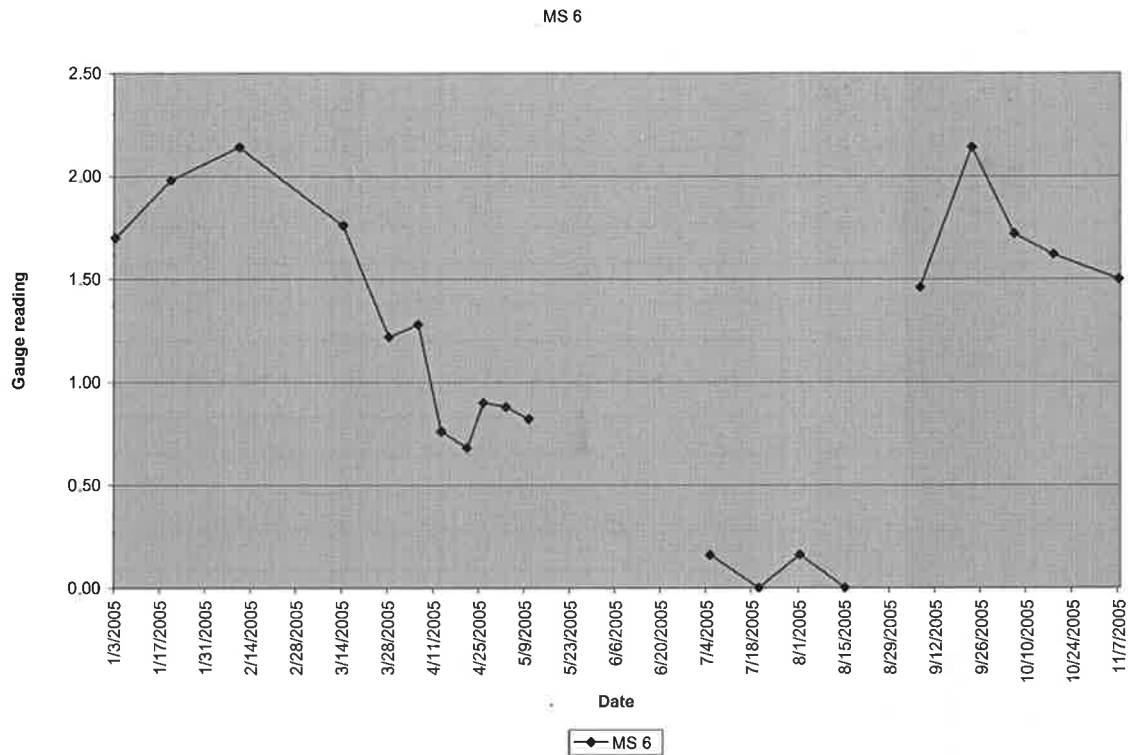
Water level guide	2006 Date	Actual Water level	Notes
	1/5	3.62	
	1/23	3.70	water to Road @ Rebecca's. 1/24 - opened gate to lake 9am - 3.7
	1/25	3.50	opened in AM
	3/7	3.54	Closed in PM
	3/20	3.60	Open to C.C. for partial did. (10:00am) - closed 4pm 3.54
	Mar. 22	3.52	Opened 8:30am. 23 - 3.12 - closed 7am
	3/27	3.14	Opened 3:30pm 3/28 - closed - 2.90 (dirty)
	Apr.		
	May 5	2.66	
	22	2.90	-opened to ditch @ did. 11am - closed 4:30pm -
	24	2.80	opened 7:30am
	30	2.66	
	June		
	7	2.58	
	21	2.35	
	26	2.84	
	July		
	3	2.7	
	18	2.9	Open daily 24 - 2.5
			9 min 7A rush
	Aug. 1	0.92	8/12 - disk 7A
	16		Refined unit &
	31	3.00	Pumping during the week only.
3.1	Sept. 14	3.2	Pump OFF
	19	3.3	
	Oct. 16	3.26	
	Nov 14	3.55	
	21	3.60	
	Dec 4	3.80	Opened - 2:38pm Closed 12/10 - 3.22
	15	3.3	

1/3/07 3.48

Unit: MSU 6

Acres: 70

2005 Activity: A muskrat hole leak on the north dike was found in early spring and was repaired in the summer. This unit's water decreased throughout the season and was completely down at the gauge by July. Water was added in September to aid in filling FU6.



Unit Goal: Provide foraging and resting habitat for migratory birds as well as brood habitat.

Objectives: Manage for hemimars conditions.

Strategies: Last years natural draw down is suspicious. Watch the unit carefully in 2006 to inspect for leaks. If water gets too low, add water. May levels should be around 1.5 on gauge, keep levels above 0.5

Management Strategy Constraints:

@ 1.5 - water 6-15" in cattail

Unit: MS 6

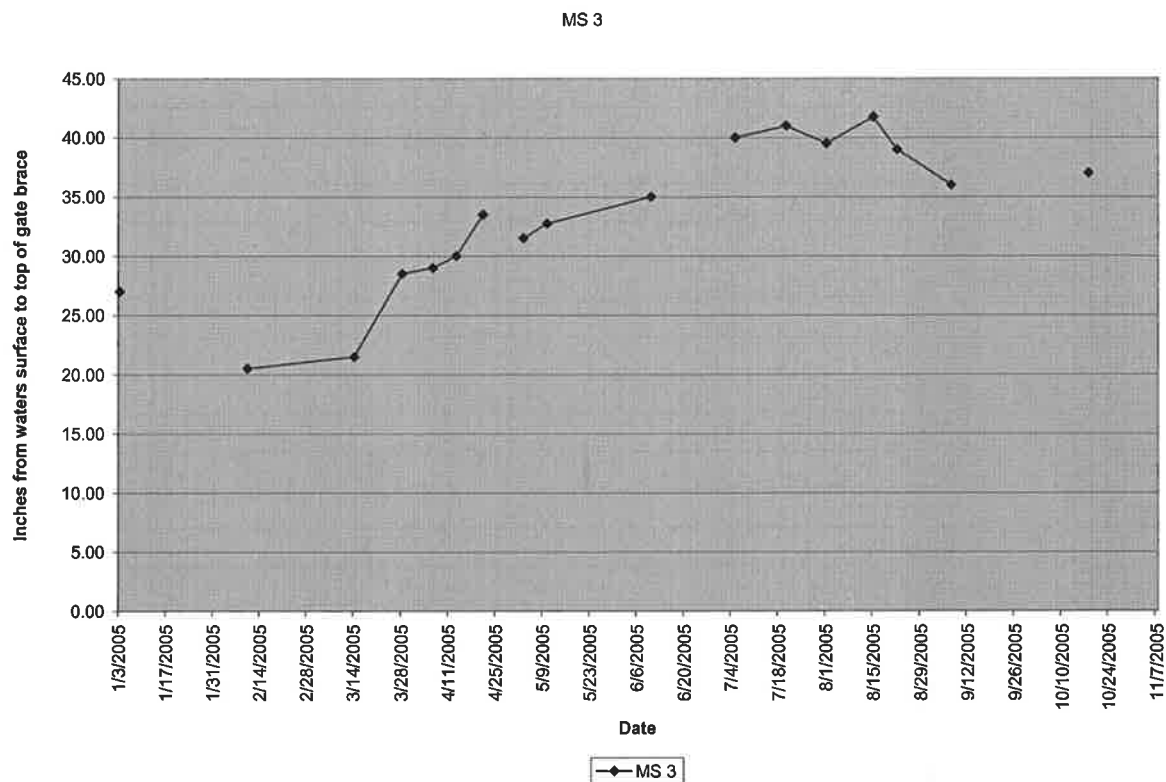
Water level guide	2006 Date	Actual Water level	Notes
	1/5	1.92	
	1/24	2.0	Opened to lake. 3pm closed LG Windy
	1/25	1.70	opened in Am. then closed. Gate off track
1.5	3/7	1.18	Gate to FV6 leaking
	20	1.16	" "
	Mar. 27	1.14	
	Apr.		
1.5	May 5	0.70	
	30	0.58	
	June 5	0.03	Turned ms Pump on 11:30am - OFF 0.40 4pm
	7	0.56	14 - 0
	20	0.82	
1.3	21	0.88	26 th 1.12
	July		
	3	0.98	
	18	0.96	24 - opened & d.d. - 0.70
	Aug. 1	0.0	mud flats
			begin work on structure
	17		finished gate, pumping up (too high, so let water back out)
		0.30	Working on ms ditch gate in drop box
	Sept.		
	19	0.40	
	21		Pumping up to flood FV6
	Oct. 16	1.34	
	Nov 14	0.84	
	19	0.92	21 - 1.08 (see FV6) 22 - 1.15
	Dec 4	1.36	
	15	1.40	

1/3 1.5 (windy)

Unit: MSU 3

Acres: 225

2005 Activity: water was added in the fall to optimize waterfowl habitat.



Unit Goal: Provide a nesting and feeding area for migratory birds as well as brood habitat.

Objectives: Maintain as hemi marsh. Provide emergent and submergent marsh habitat for waterfowl, swans, and rails.

Strategies: Maintain flooded optimum pool, with maximum water levels at 23 inches in May and minimum at 36 inches in October.

Management Strategy Constraints:

Unit: MS 3

(when filling, open 24" gates all the way, 36" gate on ditch open only 1')

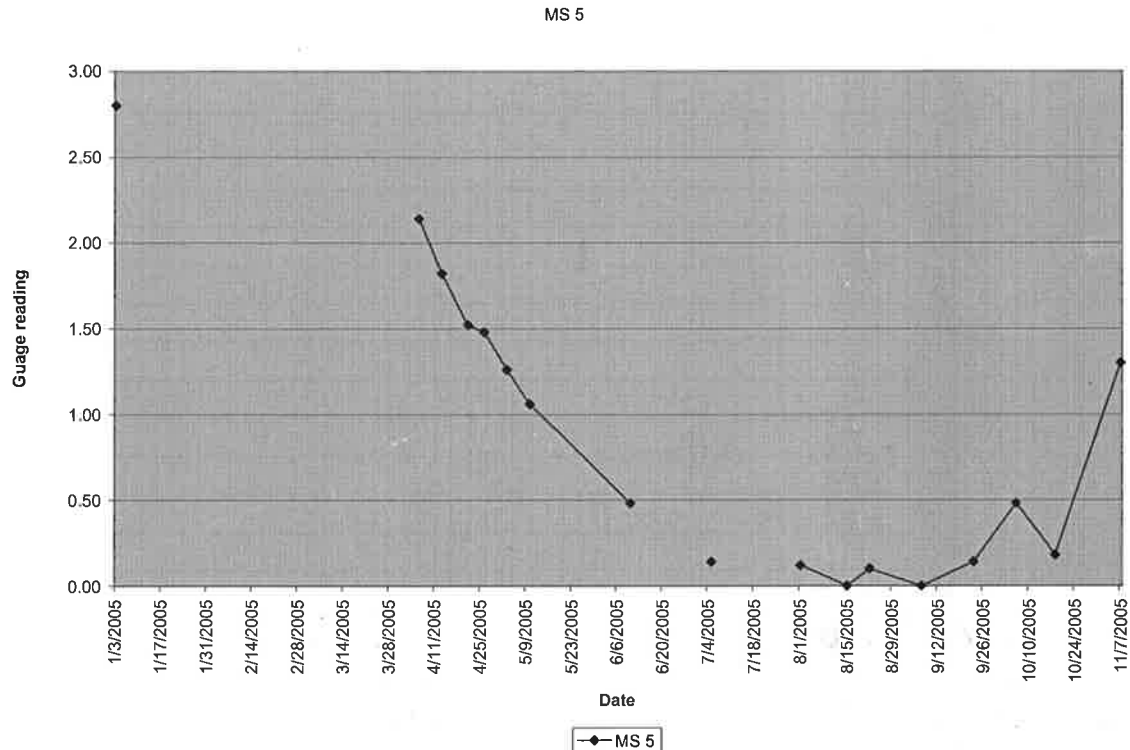
Water level guide	2006 Date	Actual Water level	Notes
	1/5	33"	
			New gauge
	Mar. 7	1.1 = 32 1/2"	
25"	20	1.1	
	Apr.		
	May 5	0.90	
	30	.98	
	June		
	7	.93	
1.2	21	.7	gauge is cracked
	26	.98	
	July		
	3	.93	
	18	1.00	
	Aug. 1	.93	
	11	0.74	Gate into ms ditch leaking (double gate set, east gate)
	31	0.70 = 36 1/2"	
33"	Sept.		
	19	0.66	
	Oct. 10	0.68	
36"			
	Nov 14	1.1 0.88	
	Dec 4	1.1	
	15	1.1	
	1/3	1.20	

23 21"

Unit: MSU 5

Acres: 256

2005 Activity: The water gauge fell off the pole and was reset, so readings are not comparable to previous years. This unit was drawn down to increase vegetation. The dewatering process began in March by free flowing. In May the MS pump was turned on to complete the process by early July (95% of unit drawdown). A small area remained wet that made excellent mudflats and shallow water season long for shorebirds and teal. There was tremendous bird response from the draw down. There was great response by annuals and unfortunately velvet leaf as well. The unit was attempted to be reflooded gradually in mid September. However, low lake levels prohibited the unit from filling.



Unit Goal: Provide a resting and feeding area for migratory birds.

Objectives: Provide a hemi marsh with diverse emergent vegetation and increase diversity of submergent vegetation.

Strategies: To increase plant diversity, maintain a variety of water levels. The topography of this unit should easily allow this. If water levels are at 2.6 in May this should allow for sufficient water on the high ground (1') and not too deep for submergent vegetation to get sunlight. Evapotranspiration will decrease water levels approximately 1 foot by September.

Management Strategy Constraints:

Unit: MS 5 - when filling open gate $\frac{1}{2}$ - $\frac{2}{3}$ way.

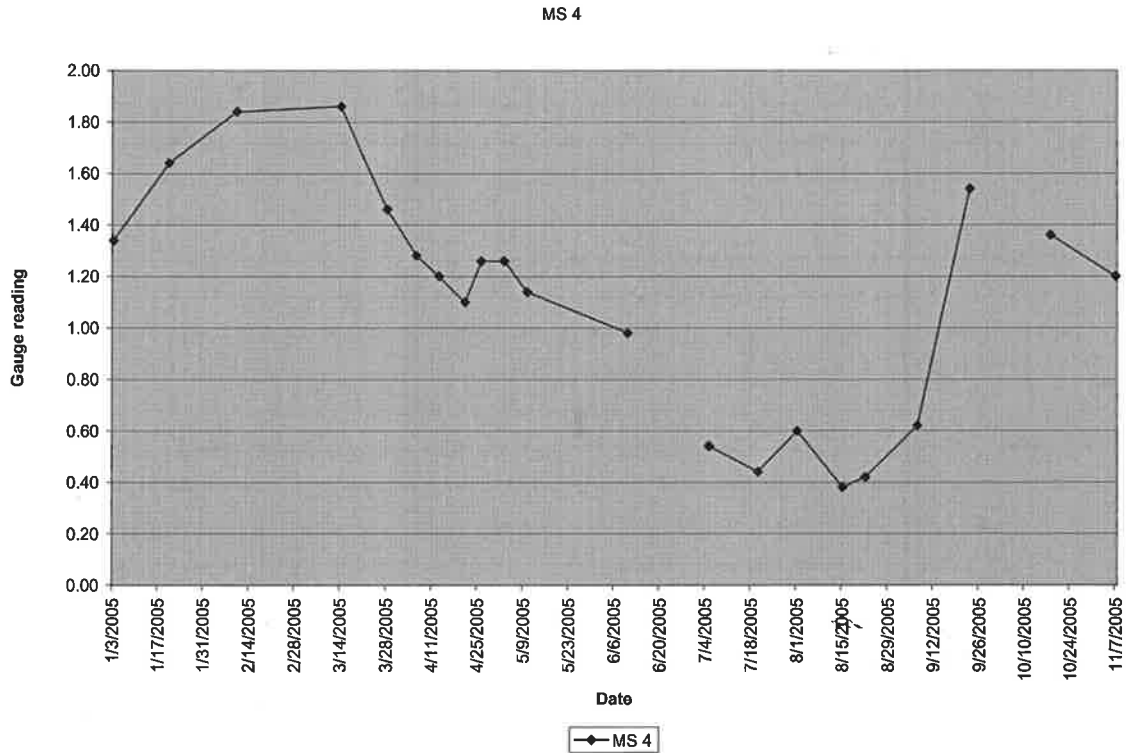
Water level guide	2006 Date	Actual Water level	Notes
	1/5	1.96	
	3/7	2.14	
	20	2.20	
	Mar.		
2.0	Apr.		
2.6	May 5	2.0	
	19	2.2	
	30	2.19	
	June 7	2.06	Pumping
	7	1.96 2.14	
	6/8	2.08?	Closed stop Pumping
2.4	6/15	2.14	6/14 - 2.00 Pumping <input checked="" type="checkbox"/> 20 - 2.28 21 - 2.38 26 - 2.66
	July		
	3	2.56	
	5	2.70	
	18	2.58 2.74	
	Aug. 1	2.68	
	11	2.5	
	31	2.50	Gate leaking into MS ditch (ditch down)
	Sept. 11	2.40	
1.6	19	2.44	
			(ditch put into ms. 5) - from flood F06
	Oct. 16	2.60	
	Nov 4	3.00	Full Pool! MS4/5 Dike Maxed!
	19	3.10	
	Dec 4	3.34	Gauge Stops @ 3.32 Opened 12/5 closed 12/10 - 2.64
	15	2.66	
	1/3	2.86	

Unit: MS4

Acres: 112

2005 Activity: Spring and winter collected water was let out in March.

Evapotranspiration decreased water levels throughout the season. Low water levels were completely removed in late August to provide shorebird habitat. The unit was reflooded in September.



Unit Goal: Provide a nesting and feeding area for migratory birds as well as brood habitat.

Objectives: Maintain as hemi marsh Decrease phragmites and reed canary grass invasions.

Strategies: Manage for water levels that stress phragmites and reed canary grass – approximately 18” over high ground in May. Evapotranspiration will decrease water levels 8-12” by fall and provide dabbling duck habitat.

Management Strategy Constraints:

Unit: MS 4

Water level guide	2006 Date	Actual Water level	Notes
	1/5	1.56	
	3/7	1.62	
	20	1.62	
	Mar.		
	Apr.		
1.8	May 5	1.38	
	30	1.36	
		1.25	
	June		
	7	1.26	
	21	1.25	
1.6	26	1.32	
	July		
	3	1.26	
	5	1.40	
	18	1.38	
	Aug.		
	1	1.3	
	11	1.1	
	31	1.1	
	Sept. 11	.96	
	19	1.04	
	Oct. 16	1.1	lots of ducks on East half
	Nov 14	1.40	
	Dec 4	1.70	
	15	1.70	
	1/3	1.80	

Unit: Pool 3

Acres: 240

2005 Activity: A new gauge was installed in October. The screw flap gate to Veler Road ditch was set to flow into the unit during high water levels in the fall.

October and December water level: 0.88

Unit Goals: The primary objective of this unit is to provide food resources and resting cover for migratory waterfowl, waterbirds, nesting Bald Eagles and other wetland animals. In addition water levels are managed to encourage native wetland plants and discourage exotic invasive species.

Objectives: Manage for hemi marsh conditions.

Strategies: Increase water levels (2.5 on gauge?) so that the west end has deeper water. Realize that evapotranspiration could decrease spring water levels one foot by October.

Management Strategy Constraints: To increase water levels any higher than winter and spring collected sheet water, a portable pump will need to be used.

1

Water level guide	2006 Date	Actual Water level	Notes
	1/5	1.30	
	1/23	1.48	
	Mar. 7	1.60	
		1.70	
Reflood	Apr.		
2.5	May 30	1.76	closed 2:10 - needs grease
	June 7	1.66	
	21	1.62 1.42	
	26	1.75	
	July 3	1.60	
	18	1.76	
	Aug. 1	1.74	
	31	1.56	
	Sept. 19	1.50	
	Oct. 16	1.50	
	Dec 4	2.02	
	15	2.10	
	1/3	2.20	

Unit: Metzger Marsh

Acres:

2005 Activity: Closed to the lake to maintain high water levels to control Phrag.

Unit Goal:

Objectives:

Strategies:

Management Strategy Constraints:

Measure from waters surface to top of lower platform on unit side. Maintain full pool for control of invasives.

[illegible]

Unit: Pool 9

Acres: 77

2005 Activity:

Unit Goals

Objectives:

Strategies:

Management Strategy Constraints:

Water level guide	2006 Date	Actual Water level	Notes
	Mar.		
	Apr.		
	May 30	23 3/4"	from water surface → top of middle
	June 7	24 21.5 21	'' ''
	July 3 18	25 24.5	
	Aug. 1	0.00	New gauge installed west end of
	31	1.40	NE corner 1.5" 0 is → 2 inches from
	Sept.		
	Oct. 10	1.30	
	Nov 14	1.54	→ Near Veler Rd
	Dec 4	1.80	
	15	1.80	
	1/3	2.05	id. ndlg

id. notog

Unit: Pool 9 borrow area

Acres: 38

2005 Activity: This unit was drawn down beginning in March and was complete in early May. Approximately 10% remained flooded and slowly evaporated throughout summer. There was a good response of millet to the drawdown. The unit was reflooded by mid October. The gauge was moved in September and may sit approximately 6" lower than early readings.

Unit Goals: Provide habitat for waterfowl, wading birds, and shorebirds. Provide public use waterfowl hunting opportunities.

Objectives: Obtain 19 acres of deep to shallow submergent vegetation and 19 acres of deep to shallow emergent vegetation. Control Eurasian watermilfoil. Maintain 3 water blinds for waterfowl hunting season.

Strategies: Manage spring water levels to read approximately 2.0 – 2.4 in the spring. Evapotranspiration will decrease water levels no more than 12" by fall. This will still provide adequate hunting access.

Management Strategy Constraints:

Unit: Pool 9 borrow area

Water level guide	2006 Date	Actual Water level	Notes
	1/5	1.60	
	Mar. 7	1.90	
	20	2.10	
	Apr.		
	May		
	30	2.14	
	June		
	1	2.06	
	21	1.82	
	26	2.16	
	July		
	3	2.08	
	18	2.24	
	Aug. 1	2.24	view blocked
	Sept. 21	1.98	Open to C.C. to take H ₂ O out. Closed - no flow
	25	1.90	Open to C.C. & closed lol
	Oct. 16	1.60	
	Nov 14	1.90	
	Dec. 4	2.30	
	1/3	2.55 - 2.60	Windy

Unit: FU 6

When water reaches turn around area by rock pile, full pool.

Maybe able to pump FUb up thro MS ditch if you start sooner & only run pump in the day.

Water level guide	2006 Date	Actual Water level	Notes
	Mar.		
	Apr.		
	May		
	June		
	July		
	Aug.		
	Sept. 18		Reflooding thru MS ditch
	20		Begin flooding hunt unit ditch too high Pump off in pm
	21	0.6	Pumping MS6 - free flowing into FUb
	22		Pumping into MS6 + MS ditch 25-1.6 closed gate in pump to ditch pm.
	Oct.		
	Nov 14	1.96	
	19	2.00	Open to MS6 to do some. 21- 1.90
	22		Closed
	Dec 15	2.00	

Unit: **FU 2**[illegible]

Unit: Blind 93

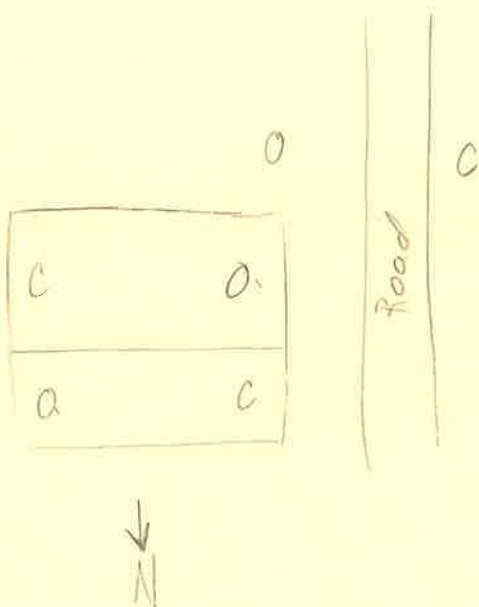
From waters surface to middle brace on screw gate

Mini Marsh gate to ditch needs 17 turns to keep up w/ pump (Thompson)

Water level guide	2006 Date	Actual Water level	Notes
	Mar.		
	Apr.		
	May		
	June		
	July		
	Aug.		
	Sept.		
	9/25		Begin flooding hunt unit
	Oct.		
	12/19		boards set @ full pool, & higher will flow out back.
	1/3		letting H ₂ O out

Structure 17" width.

DARBY



Pump Ditch 2006

3/24 - closed to Lake to keep high
water but check occasionally

8/24 - Pump on to flood chumers

8/29 - Pump off.

10/ - Pump on

10/ - Pump off

11/21 - ditch too high opened to lake in
drop box

11/22 closed to lake

7/12/06 10-11am
Darby H₂O levels

1 2.58

2 3.08

3 1.45

4 ≈ 1.82

Unit: **Darby Pool 1**
 Maintain full pool.

Water level guide	Date 2006	Actual Water level	Notes
2.0	Mar. 1	2.40	
	Apr. 5	2.40	
	May 17	2.44	
1.8	June		
	20	2.3	
	July 12	2.68	
	17	2.68	
	Aug.		
	Sept. 6	2.32	
1.0	Oct. 16	2.30	- Very high along south dike, but lots of ducks
	26	2.54	
	Nov 31	2.64	- lots of duck
	Dec 19	2.81	- open gate 4" @ 10:45
	21	2.30	closed

Darby

Unit: Pool 1

Acres: 200

2005 Activity: High water was released in the spring. Some water was added in the fall from the pump ditch which was filled as requested by neighbors.

Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Provide a hemi marsh rich in invertebrates and decrease P. Loosetrife infestations.

Strategies: Manage unit at full pool (1.8-2.0 in spring and 1.0 in fall)

Management Strategy Constraints:

Unit: Darby Pool 4

Water level guide	Date 2006	Actual Water level	Notes
	Mar. 1	1.64	
	Apr. 5	1.68	
1.6	May 17	1.66	
	June		
	20	1.50	
	July 12	1.82	
	17	1.96	
	Aug.		
	Sept. 6	1.48	
	Oct. 16	1.40	high along SW grass dike 1/2' freeboard
	26	1.66	
	Nov 21	1.74	10.8 at ducks
	Dec 19	1.92	open 4" at 11:15 Dec. Closed 20 th - 15.2
	27	1.80	

Unit: Pool 4
Acres: 170
2005 Activity:

Unit Goal:

Objectives:

Strategies:

Management Strategy Constraints:

Unit: Darby Pool 3
 Maintain full pool.

Water level guide	Date 2006	Actual Water level	Notes
2.4	Mar. 1	0.84	New gauge + stop log gate - gate set @ 0 = bottom
	Apr. 5	1.08	
	May 17	1.98	
2.0	June		
	20	1.0	
	July 12	1.45	
	17	1.60	
	Aug.		
	Sept. 6	1.16	
2.3	Oct. 16	1.18	
	26	1.50	
	Nov 21	1.70	lots of ducks
	Dec 19	1.92	
	Dec 27	2.00	

Unit: Pool 3

Acres: 25

2005 Activity: The water control structure and pipe are leaking from the main pump ditch. Unit water levels are reflective of ditch levels.

Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Provide a combination of both annual and perennial vegetation in a hemimarsh.

Strategies: Fix the leak to allow for water level management. Levels should read approximately 2.4

Management Strategy Constraints:

Unit: **Darby Pool 2**
 Maintain full pool.

Water level guide	Date 2006	Actual Water level	Notes
2.8	Mar. 1	3.00	
	Apr. 5	3.08	
	May 17	3.02	
	June		
	20	2.8	
	July 12	3.08	
	17	3.18	
	Aug.		
	Sept. 6	2.70	
2.3	Oct. 16	2.60	
	26	2.88	
	Nov 21	3.00	10's & 11's
	Dec 19	3.16	open 4" at 11:50
	27	2.78	Closed 20 th

Unit: Pool 2

Acres: 25

2005 Activity: No active management

Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Manage for hemi marsh conditions

Strategies: Manage unit at full pool (3.0 in May and 2.3 in October)

Management Strategy Constraints:

C.P.

Unit: Cedar Point Pool 1

Water level guide	Date 2006	Actual Water level	Notes
3.0	Mar. 7	3.08	20" - 3.16 28-3.18
	Apr.		
	May 15	3.02	
	18	3.04	
	25	3.00	
	June		
	7	2.91	
	21	2.86	
	July		
	3	2.86	Purple loose strike in pool 1
	17	2.90	
	25	2.70	31 - 2.8 best estimate (dirty)
	Aug. 1		Pump on
	21		Pump dry - OFF
	24		Pump on
2.9	Sept. 5	2.86	
	18	2.90	
	Oct. 4	3.06	
	10	3.08	
	21	3.26	
	Nov. 6	3.34	
	Nov 14	3.45	Pump dry
	Nov 29	3.52	

Dec 11 3.68

Cedar Point

Unit: Pool 1

Acres: 1,460

2005 Activity:

Unit Goal:

Objectives:

Strategies: Manage water levels around 2.9-3.0 for wildrice. Keep around there and don't let it get lower

Management Strategy Constraints:

Unit: **Cedar Point Pool 2**

Keep water as high as possible, without flooding neighbor's woods.

Water level guide	Date 2006	Actual Water level	Notes
2.7	Mar.	2.7	Full Pool
	Apr.		
	May	2.47	
	25	2.12	
	June		
	9	1.9	
	21	1.97	Dirty (can't see)
	July		
	3	1.87	dirty
	17	2.84	
	31	2.0	best estimate
	Aug.		
1.6	Sept.		
	Oct.		
	Nov 14	2.1	estimate
	1/9	2.70	Very high! Water high in grade's woods

Unit: Pool 2
Acres: 135
2005 Activity:

Unit Goal:

Objectives:

Strategies: Draw down for construction project on west dike.

Management Strategy Constraints:

Unit: Cedar Point Pheasant Farm

Measure from waters surface to top of water control structure

Water level guide	Date 2006	Actual Water level	Notes
26" or >	Mar. 7	28"	20-27"
	Apr.		
	May		
	8	29 1/2"	
	June		
	7	29 1/2"	
	21	31.5"	
	July		
	3	31"	
	17	29"	
	31	30.5"	New gauge Aug 31 0.00" H₂O level
	Aug. 8		new gauge = .9
	Sept.		
	Oct.		
	Nov 6	1.08	
	Nov 14	1.16	
	1/13	1.76	

Unit: Pheasant Farm

Acres: 155

2005 Activity:

Unit Goal:

Objectives:

Strategies: Manage for against invasives. Maintain high water levels.

Management Strategy Constraints: Gate to county drainage ditch leaks.

Diefenthaler: Maintain full pool.

Kontz: Maintain full pool

Schneider: Maintain water 1' less than full pool. Monitor for potential flooding to neighbor.

5/30 = 1.0 June = 0.7

7/1 = 1.34 8/10 = 1.26 8/31 1.24

Helle: SE unit needs more water.

9/26/06 - 1.1

~~Needs~~ 11/7/06 - 1.40

~~SEW~~ 12/19/06 1.44
Flowing over board

Gaeth-Kurdy:

) Aug 8 Blausey = new gauge = 0.76

Aug 10 = 0.72

Sept 24 - 0.44

Nov 6 - 0.88

Dec 27 - 1.30

